

# Organization and Activities of the Doctoral Program in Geoenvironmental Sciences for the Academic Year 2019

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## Organization

During the year from April, 2019 to March, 2020, several promotions and appointments were made so that our research and teaching activities covering geoenvironmental sciences were enforced. Following is the list of all faculty and administrative staffs with specialties:

### *Professors:*

Asanuma, Jun, Ph.D., Chair, surface hydrology, hydro-meteorology, flood risk management  
Kureha, Masaaki, Ph.D., regional geography, geography of tourism, rural geography  
Kusaka, Hiroyuki, D.Sc., urban climatology, mountain meteorology, applied meteorology  
Matsui, Keisuke, D.Sc., cultural geography, geography of religion and tourism  
Matsuoka, Norikazu, D.Sc., geomorphology, geocryology  
Sugita, Michiaki, D.Sc., hydrologic sciences, surface hydrology, boundary layer meteorology  
Tanaka, Hiroshi, Ph.D., atmospheric science, general circulation  
Tsuji-mura, Maki, D.Sc., hydrologic sciences, groundwater hydrology, isotope hydrology  
Tsutsumi, Jun, D.Sc., urban geography, regional geography of Australia, GIS  
Ueda, Hiroaki, D.Sc., atmospheric science, climate dynamics

### *Associate Professors:*

Hattanji, Tsuyoshi, D.Sc., hydrogeomorphology, slope processes  
Ikeda, Atsushi, D.Sc., geomorphology, geocryology  
Ueno, Kenichi, D.Sc., atmospheric science, precipitation system, regional climatology  
Yamanaka, Tsutomu, D.Sc., hydrologic sciences, isotope tracers, ecohydrology

### *Assistant Professors:*

Akiyama, M. Chiaki, D.Sc., geography of land use issues, spatial information science  
Harada, Mariko, Ph.D., earth and planetary system science, paleoclimatology, paleoenvironment  
Kubo, Tomoko, D.Sc., urban geography, geography of housing, geography of North America

Matsueda, Mio, D.Sc., atmospheric science, predictability of weather and climate  
Morimoto, Takehiro, D.Sc., agricultural and rural geography, GIS and spatial information science  
Parkner, Thomas, Ph.D., geomorphology, gully erosion, soil erosion, mass movements  
Sakamoto, Yuki, D.Sc., regional geography, cultural geography  
Sekiguchi, Tomohiro, Ph.D., geomorphology, sedimentology  
Shinozaki, Tetsuya, Ph.D., erosion and deposition around coastal land, tsunami deposit  
Yamashita, Akio, D.Sc., regional geography, geography of urban environmental issues

### *Technical Staffs:*

Miyasaka, Kazuhito, B.A.  
Ozaki, Shiro

### *Administrative Staff:*

Ishihama, Tsuruko

## Doctor and Master's Theses

### [Abbreviations]

D.Sc. Doctor of Philosophy (Science or Geoscience)  
D.Env. Doctor of Philosophy (Environmental Studies)  
M.Sc. Master of Science  
M.Sc. (M) Master of Science in Mountain Studies  
M.Eng. Master of Engineering  
M.Env. Master of Environmental Science  
M.A. (E) Master of Arts in Education  
M.A. (A) Master of Arts in Area Studies

### [a] Human Geography

M.Sc. Ayada Yasuyuki (2020): Relationship among Actors in Sustainable Tourism on Pokémon GO: A Case Study of Yokosuka City, Kanagawa Prefecture.  
M.Sc. Guo Qingxuan (2020): Formation Pattern and Problems of Chinese Tourist's Image of Tourist Area: A Case Study of Enoshima in Kanagawa Prefecture.  
M.Sc. Haga Mikihiro (2020): Representaion of Kyoto-style in terms of Residents' Consciousness in Tanagura Town, Fukushima Prefecture.

- M.Sc. Jiang Mengxuan (2020): Characteristics of Sustainable Literary Tourism in Yueyang City.
- M.Sc. Li Shihui (2020): Perception of Residents and Sustainable Tourism in Historic Preservation District: A Case Study of Zhujiajiao Ancient Town, Shanghai.
- M.Sc. Liu Bowen (2020): A Study on the Transformation of Rural Tourism in China: A Case of Nongke Village, Chengdu City.
- M.Sc. Usui Haru (2020): Causes of Spatial Fertility Variation in Japan: Analysis based on Municipal Statistics of Census and Urban Employment Areas.
- M.Sc. Shinohara Koki (2020): Diversification of Regional Images through a Tourism Development in Case of Tequila, the State of Jalisco, Mexico.
- M.Sc. Wu Yue (2020): Conservation and utilization of Cultural Landscapes as Local Resources and Issues of Community Improvement.
- M.Sc. Zou Siqi (2020): Re-Creation Process of Ohno Shrine as Sacred Space.
- [b] Regional Geography**
- D.Sc. Nakagawa, Sachi (2020): Characteristics of Yokohama as the Prostitution Area in the 1950s Viewed from the Relocation History, Residence and Relationship with Urban Residents of Sex Workers.
- M.Sc. Hirasawa, Kengo (2020): Forming process of individual's environmental consciousness on local communities: A case study of Kita Kyushu City.
- M.Sc. Hirauchi, Yuma (2020): Japanese CCRC residents from the view of changing residence and community activity participation: A case study of Kita Kyushu City.
- M.Sc. (M) Sato, Daisuke (2020): Study on the behavioral characteristics and mountaineering culture of foreign trekkers: Focusing on the analysis of trekkers from Korea and Taiwan at Mt. Yari-gatake.
- [c] Spatial Information Science**
- D. Sc. Lianxiao (2019): Spatial Analysis of Flood Risk: A Case Study of Katsushika Ward, Tokyo.
- D. Sc. Dissanayake, DM Sanjeewa Lasantha Bandara (2020): Assessing the Sustainability of Agriculture Using Geospatial Techniques: A Case Study of Kotmale Catchment Area, Sri Lanka.
- D. Sc. Priyankara, Anthony Chaminda Prabath (2020): A Study on Geospatial Approaches to Develop Maize Production in Sri Lanka: A Case Study in Hulannuge GND, Ampara District.
- D. Sc. Wang, Ruci (2020): Scenario Simulation of Land Use/Cover Changes Based on Markov Model and Land Change Modeler in the Tokyo Metropolitan Area: Towards Future Sustainable Development.
- M. Sc. Kanda, Shota (2020): Changes in Commuting Patterns in Southern Kanto Region.
- M. Sc. Kawai, Akinobu (2020): Spatial Analysis of Differences in Rice Growth Using UAVs in a Mountainous Area: A case study of the Fukuyama-Shinden in Uonuma City, Niigata Prefecture.
- M. Sc. Kobayashi, Hiroki (2020): The Foehn causing extreme high temperature in northern central Vietnam.
- M. Sc. Li Yifeng (2020): Estimation of Areas with Excessive Demand for Medical Care in the Near Future in Ibaraki Prefecture Using GIS.
- M. Sc. Maebata, Miru (2020): Influence of mountain height and atmospheric conditions on the cap cloud formation.
- M. Sc. Maeda, Tomoka (2020): Differences in the Atmospheric Conditions between Cap, Tsurushi, and Banner Clouds around Mt. Fuji.
- M. Sc. Motohashi, Yosuke (2020): Development of the Anelastic Approximation Local Wind Model with Generalized Curvilinear Coordinate System.
- M. Sc. Nagata, Aya (2020): Impacts of Thermal and Dynamic Effects of Newly Developed City Center in Tokyo on Small Cumulus Clouds.
- M. Sc. Negishi, Momoko (2020): Development of prediction for nighttime fog in Chichibu basin.
- M. Sc. Zhang Shiyao (2020): Exploring the Spatial-Temporal Variation Analysis of Crop Residue Burning in Northeast China.
- M. Sc. Zhang Yunqi (2020): Analysis on the Driving Force of Urbanization Process: A case study of Dalian urban city, China.
- [d] Hydrologic Sciences**
- D. Env. Tran, Dang An (2020): Groundwater Flow Dynamics and Hydro-geochemical Processes in Coastal Aquifers of the Mekong Delta, Vietnam.
- D. Env. Sugiyama, Ayumi (2020): Groundwater flow

- process and microbial dynamics in a forested mountainous catchment.
- M. Sc. Izumi, Maruyama (2020): Reproduction of stable isotope ratio of lake water and reconsideration of lake water balance evaluation by isotope in mountain area in the central Japan.
- M. Env. Wang, Jingyuan (2020): Direct measurement of turbulent fluxes on a pleasure boat over Lake Kasumigaura.
- M. Env. Hakim, Md Samiul (2020): Characteristics and Causes of Surface Temperature Variability Obtained by ASTER sensor in Summer Season over Lake Kasumigaura.
- M. Env. Silveira, Isabela (2020): Long-term Temporal Variation of Mean Residence Time in Spring and Groundwater After Thinning at a Forested Headwater Catchment.
- M. Env. Ahmadi, Islem (2020): Groundwater Flow System and Salinization in Chott Meriem Coastal Aquifer, Tunisia.
- M. Env. Tang, Yidi (2020): Characteristics of Groundwater and Surface Water Quality in Liaodong Bay Coastal Area, China.

#### [e] Atmospheric Science

- M. Sc. Matsunobu, Takumi (2019): Predictability Study of Severe Arctic Cyclones in Summer using Operational Ensemble Forecasts.
- M. Sc. Hara, Yoshiki (2019): A Study on the Predictability for the Barotropic General Circulation Model.
- M. Sc. Hagiwara, Misako (2019): A Study of the Atmospheric Gravity Wave that Connects the Thermosphere and Troposphere.
- M. Sc. Ito, Kazuki (2019): The Change of Cloud Properties and Influences Focused on Short-wave Flux.
- M. Sc. Morihiro, Sawada (2020): Structural analysis of airflow system and precipitation associated with temperate cyclone causing heavy precipitation in winter.
- M. Sc. Yuki, Kobayashi (2020): Analysis of formation mechanism of sea of clouds in Japanese Alps region utilizing satellite data.
- M. Sc. Asano, Saki (2020): Genesis of the seasonal evolution of subtropical high in the upper troposphere.
- M. Sc. Kariya, Sayaka (2020): Coupled atmosphere-ocean wave in the seasonal evolution over the tropical Atlantic Ocean.
- M. Sc. Tanji, Natsumi (2020): Trans-basin interac-

tions among the Indian, Pacific, and Atlantic Ocean.

#### [f] Geomorphology

- M. Sc. Lin, Jung-Hsuan (2019): Weathering of serpentinite in relation to landslide types in Yahata Landslide, Japan.
- M. Sc. Kawano, Takatoshi (2020): Radiocarbon-based chronology of valley head deposits: A case study of landslide scars in Hofu, Yamaguchi Prefecture.
- M. Sc. (M)Kizuki, Takaya (2020): Timing and rate of rockglacier advances since Lateglacial period in Mattertal, Swiss Alps, reconstructed by TCN dating.
- M. Sc. Oi, Masaki (2020): Effect of temperature and humidity changes on salt weathering - Verification by a field experiment.
- M. Sc. Suzuki, Takahiro (2020): Experimental researches on seafloor sediment transport by tsunami flow.
- M. Sc. Yoshihara, Naoyuki (2020): Estimation of subsurface structure on granitic hollow hillslopes by using electrical resistivity survey.

#### Research Activities

Each research group had the following research activities during the academic year 2019.

#### [a] Human Geography

##### *Research projects*

Matsui, K. and Akiyama, C. (2018-2020): Geographical studies on sustainable development in Kashima and Kamisu Cities and the surrounding region.

##### *Research grants*

Akiyama, C. (PI: Akiyama, C.) (2019-2020): Study for development of a sustainable sewage treatment system for the future. Grant-in-Aid for Early-Career Scientists, JSPS, JPY 2,340,000.

Matsui, K. (PI: Matsui, K.) (2019-2022): Geographical study on the creation of local communities in remote islands. Grant-in Aid for Scientific Research (B), JSPS, JPY 17,290,000.

\_\_\_\_\_ (PI: Matsui, K.) (2018- ): Geographical study on utilization of places and sustainable development. Donation for Scientific Research, Research and Consulting Regional Science Co. Ltd, JPY 850,000.

\_\_\_\_\_ (PI: Matsui, K.) (2019-2020): Urban planning for Kamisu City: Proposal for Livable City

with industrial vitality. Donation for Scientific Research, Kamisu City, JPY 1,001,000.

Kubo, T. (PI: Kubo, T.) (2018): Equity planning in Chicago to overcome income and spatial polarization. Middle to Short-Term Overseas Dispatch Program FY2019, University of Tsukuba, JPY 1,000,000.

\_\_\_\_\_ (PI: Kubo, T.) (2018- ): International comparative study on expansion of empty space in urban areas and the gap in residential environment. Grant-in-Aid for Early-Career Scientists, JSPS, JPY 4,160,000.

\_\_\_\_\_ (PI: Kubo, T.) (2018-2019): A comparative study on the expansion of decline in residential environment in Chicago and Japanese cities. Fulbright Japan 2018-2019 Scholarship (Researchers), Flight tickets, JPY 100,000, and USD 33,780.

\_\_\_\_\_ (PI: Yui, Y.) (2015-2019): Geographical contribution for solutions of vacant housing problems in population decreasing urban areas. Grant-in-Aid for Scientific Research (B), JSPS. JPY 15,990,000.

#### *Overseas fieldwork*

Sakamoto, Y. (2019, Sep.): Impact of tourism on local culture in Oaxaca (Mexico).

#### *Attendance at international meetings*

Kubo, T. (2019, Apr.): Ann. Meeting of Urban Affairs Association at University of California at Los Angeles.

#### *Visited researchers*

Dr. Liu Chang from Jiangsu College of Engineering and Technology, Jan. 2020- (Host researcher: Matsui, K.).

#### *Others*

Kubo, T. (2018, Oct.-2019, Sep.) Visiting researcher (Fulbright Faculty) at University of Illinois at Chicago.

\_\_\_\_\_ (2019, Sep. 25): Invited lecture at Tufts University.

Matsui, K. (2019, Sep.-2020, Mar.): Special lecture on religious studies and history of religion in Univ. of Tokyo.

\_\_\_\_\_ (2019, Apr.-Sep.): Special lecture on cultural geography in Rikkyo Univ.

\_\_\_\_\_ (2019, Apr.-Sep.): Special lecture on regional geography in Kyoritsu Women's Univ.

Sakamoto, Y. (2019, Jul.): An encouragement award of Japan Association on Geographical Space.

\_\_\_\_\_ (2019, Oct.-Mar.): Human beings and environments in Kanto Gakuin University.

\_\_\_\_\_ (2019, Oct.-Mar.): Natural environment of the regions in Kanto Gakuin University.

## **[b] Regional Geography**

### *Research projects*

Kureha, M., Tsutsumi, J. and Yamashita, A. (2019-2021): Geographical studies on regional ecology in Ueda City and the surrounding region.

Yamashita, A. (2018- ): Causes and future prediction of heat island phenomena of rapidly growing cities in developing countries, project with Murayama, Y. (Univ. of Tsukuba).

### *Research grants*

Tsutsumi, J. (2019-2022): Industrial diversification in contemporary Australia in terms of the emerging Asia link. Grant-in Aid for Scientific Research (B), JSPS, JPY 15,210,000.

Yamashita, A. (2017-2019): Building of governance for appropriate utilization and management of irrigation canals in urbanized area. Grant-in Aid for Scientific Research (C), JSPS, JPY 2,340,000.

### *Overseas fieldwork*

Kureha, M. (2019, Sep.): Characteristics of trekking tourism in Tyrol, Austria (Support Program for Research Enhancement from the Mountain Science Center).

\_\_\_\_\_ (2020, Feb.): Redevelopment of ski resorts in the French Alps (Research Support from the Labex Innovation and Transition in Mountain Territories Program at the Univ. Grenoble Alpes).

Tsutsumi, J. (2019 Jul.-Aug.): Investigation of urban development in Luxemburg, Luxemburg, under JSPS grant.

\_\_\_\_\_ (2019 Aug.-Sep.): Investigation of urban development in Perth and tourism development in Uluru-Kata Tjuta National Park and Alice Springs, Australia, under JSPS grant.

Yamashita, A. (2019, Aug.-Sep.): Change of urban structure and urban water environment in several cities in Sri Lanka and Thailand, under JSPS grant.

### *Attendance at international meetings*

Yamashita, A. (2019, Aug.): 7th Conference on Sri Lanka – Japan Collaborative Research, Univ. of Peradeniya, Candy, Sri Lanka.

Kureha, M. (2020, Feb.): Les enjeux et le développement des stations de ski au Japon, 2020/2/20, Grenoble, France.

### *Others*

Kureha, M. (2019): Special lecture on socioeconomic geography in Hosei Univ.

\_\_\_\_\_ (2019): Special lecture on geography of tourism in Rikkyo Univ.

\_\_\_\_\_ (2019): Special lecture on regional geography of Europe in Rikkyo Univ.

Tsutsumi, J. (2019): Lecture on national land development in Takasaki City University of Economics.  
\_\_\_\_\_ (2019): Methodology of fieldwork in Takasaki City University of Economics.  
\_\_\_\_\_ (2019): Lecture on disaster management in Takasaki City University of Economics.  
\_\_\_\_\_ (2019): Area studies 5 in Rikkyo University.  
\_\_\_\_\_ (2019): Seminar for 2<sup>nd</sup> year student in Rikkyo University.  
\_\_\_\_\_ (2019): Seminar for 3<sup>rd</sup> year student in Rikkyo University.

### [c] Spatial Information Science

#### *Research projects*

Kusaka, H. (2015-2019): SI-CAT project, Ministry of Education, Culture, Sports, Science and Technology (MEXT) in Japan. Development of evaluation technologies of sectoral impact and adaptation measures on climate change/ Development of models of thermal environment and health impact for assessment of adaptation measures.  
\_\_\_\_\_ (2017-2019): RACP project, Ministry of Environment, Government of Japan. Research on evaluation technologies of heat stroke risk.  
\_\_\_\_\_ (2017-2019): JSPS KAKENHI, Estimation and Mechanism-Clarification of Trade-off in Urban Atmospheric Environment. (collaborated with Dr. N. Tsunematsu)  
\_\_\_\_\_ (2017-2019): JSPS KAKENHI, Research on Big Data Machine Learning Base to Open up Extreme Weather Forecast. (collaborated with Prof. O. Tatebe)  
\_\_\_\_\_ (2018-2020): JSPS KAKENHI, Form Factors and Future Prediction of Heat Island Phenomenon in Rapidly Growing Cities in Developing Countries (collaborated with Prof. Y. Murayama)  
\_\_\_\_\_ (2019-2022): JSPS KAKENHI, Elucidation of the synergistic effects of meteorological changes and environmental pollution through water quality by developing an integrated particle model, (collaborated with Chief researcher M. Kazino)  
\_\_\_\_\_ (2019-2022): JSPS KAKENHI, Evaluation of Impacts of Agricultural Land Dynamics on the Regional Thermal Environment Using a Regional Meteorological Model, (collaborated with A. Maruyama)  
\_\_\_\_\_ (2019-2021): Environmental Restoration and Conservation Agency (ERCA), Environment Research and Technology Development Fund of the Environmental Restoration and Conservation Agency of Japan. (collaborated with Prof. M. Inatsu)

\_\_\_\_\_ (2017-2020): Weathernews, Collaboration research for implementing micro-scale meteorological model.  
\_\_\_\_\_ (2017-2020): Takenaka Corporation, Joint Research on Application of Data Assimilation Technology in the Field of Meteorology to Numerical Simulation Technology in the Field of Architecture.  
Morimoto, T. (2019): Productivity and Land Use Change of Agriculture in the Mountainous Areas of Central Japan: Spatial Information Science and Field Observation.  
\_\_\_\_\_ (2019): Urbanization and land use/cover change in peri-urban zones in Tokyo Metropolitan Area.  
\_\_\_\_\_ (2019): Causes and future prediction of heat island phenomena of rapidly growing cities in developing countries, a project under JSPS.  
\_\_\_\_\_ (2019): Urban Expansion and its Impact on Urban Disasters in Rapidly Urbanizing South Asian Cities, a project under JSPS.

#### *Research grants*

Kusaka, H. (2015-2019): Development of evaluation technologies of sectoral impact and adaptation measures on climate change/ Development of models of thermal environment and health impact for assessment of adaptation measures. Ministry of Education, Culture, Sports, Science and Technology (MEXT) in Japan, Social Implementation Program on Climate Change Adaptation Technology (SI-CAT), JPY 2,796,928 (2019).  
\_\_\_\_\_ (2019-2021): Environment Research and Technology Development Fund of the Environmental Restoration and Conservation Agency of Japan. Environmental Restoration and Conservation Agency, ERCA, JPY 10,000,000 (2019)  
\_\_\_\_\_ (2019-2022): Elucidation of the synergistic effects of meteorological changes and environmental pollution through water quality by developing an integrated particle model, JSPS KAKENHI, JPY 500,000 (2019)  
\_\_\_\_\_ (2019-2022): Evaluation of Impacts of Agricultural Land Dynamics on the Regional Thermal Environment Using a Regional Meteorological Model, JSPS KAKENHI, JPY 1,000,000 (2019)  
\_\_\_\_\_ (2018-2022): Form Factors and Future Prediction of Heat Island Phenomenon in Rapidly Growing Cities in Developing Countries. (JSPS KAKENHI) JPY 350,000 (2019).  
\_\_\_\_\_ (2017-2019): Estimation and Mechanism-Clarification of Trade-off in Urban Atmos-

pheric Environment. (JSPS KAKENHI) JPY 220,000 (2019).

\_\_\_\_\_ (2017-2020): Collaboration research for implementing micro-scale meteorological model Weathernews, JPY 995,520 (2017-2019).

\_\_\_\_\_ (2017-2020): Joint Research on Application of Data Assimilation Technology in the Field of Meteorology to Numerical Simulation Technology in the Field of Architecture. Takenaka Corporation, JPY 1,000,000 (2019).

\_\_\_\_\_ (2017-2019): Regional Adaptation Consortium Project. JPY 3,918,326 (2019) Kanto region business consignment work.

\_\_\_\_\_ (2017-2019): Research on evaluation technologies of heat stroke risk. Ministry of Environment, Government of Japan (RACP), JPY 4,860,000 (2018).

Morimoto, T. (2018-2020): Causes and Future Prediction of Heat Island Phenomena of Rapidly Growing Cities in Developing Countries. Grant-in-Aid for Scientific Research B, JSPS, JPY 350,000 (2019). (Representative: Murayama, Y.).

\_\_\_\_\_ (2019-2021): Urban Expansion and its Impact on Urban Disasters in Rapidly Urbanizing South Asian Cities. Grant-in-Aid for Scientific Research for JSPS Research Fellows (International Research Fellow), JSPS, JPY 600,000 (2019).

#### *Overseas fieldwork*

Morimoto, T. (2019 Aug.): Study on urban heat island and land use change in the urbanizing countryside, Sri Lanka, under JSPS grant.

#### *Attendance at international meetings*

Morimoto, T. (2019 Aug.): Conference on Sri Lanka - Japan Collaborative Research 2019. University of Peradeniya, Peradeniya, Sri Lanka.

#### *Visited researchers*

Dr. Ranagalage, Manjula Mahinda as a JSPS International Postdoctoral Fellow for Research in Japan from the Rajarata University of Sri Lanka. Sep. 2019- Aug. 2021 (Host researcher: Morimoto, T.).

### **[d] Hydrologic Sciences**

#### *Research projects*

Asanuma, J. (2014- ): Hydro-Meteorological studies with Multi-satellite sensors and Multidimensional approaches at Mongolian Grassland (Hydro4m, JAXA G-COM Research Announcement).

\_\_\_\_\_ and others (2019-2020): Investigating damages and after typhoon Hagibis in Kanto region. (under financial support by the River foundation).

Tsujimura, M. (2015- ): Spatial and Temporal Variation

of Residence Time in Groundwater and Spring Water in Headwater Catchments Underlain by Different Lithology.

\_\_\_\_\_ (2016- ): Application Microbe Information to Groundwater Flow System Research.

Yamanaka, T. (2018-2020): Monitoring Stable and Radioactive Isotopes in Precipitation and River Water in the Chikuma Basin (with ICHARM).

#### *Research grants*

Asanuma, J. and Aida, K. (2019- ): Reconstructing Validation System of Satellite Soil Moisture Products (JAXA G-COM Research Announcement).

Sugita, M. (2015-2020): Grant-in-Aid for Scientific Research (C) of the Japan Society for the Promotion of Science.

Tsujimura, M. (2016-2019): Evaluation of Groundwater Residence Time Using Multi Tracers and Numerical Simulation Approaches in Headwater Catchments. Grant-in-Aid for Scientific Research (B) of the Japan Society for the Promotion of Science.

\_\_\_\_\_ (2017-2019): Evaluation of Water Resources in Mountainous Catchments Focusing on Residence Time and Microbe. Suntory Global Innovation Center Limited.

\_\_\_\_\_ (2017-2018): International Comparison Research on Residence Time and Storage of Groundwater using Isotope and Gas. Bi-lateral Joint Research Projects, Japan Society for the Promotion of Science.

Yamanaka, T. (2019-2023): Evaluation of Hydrological Components by Dynamic Isoscape Models and Its Multifaceted Developments. Grant-in-Aid for Scientific Research (B) of the Japan Society for the Promotion of Science.

#### *Overseas fieldwork*

Asanuma, J. (2019, Sep.): Field investigation and instruments maintenance at Semi-arid grassland in Mongolia (under JAXA G-COM Research Announcement).

#### *Attendance at international meetings*

Asanuma, J. (2019, Jan.): The Joint PI Meeting of JAXA Earth Observation Missions, 2019/1/21-25, Tokyo Japan.

#### *Visited researchers*

Mr. Youssef Mohammed Youssef from Suez University, Oct. 2018-2020 (Host researcher: Sugita, M.).

#### *Others*

Sugita, M.: Hosted one student from Wuhan University of Technology, School of Navigation as Exchange Research Student in Geoenvironmental Sciences, Dec. 1, 2018 –Nov. 30, 2019.

- Sugita, M.: Guest Lecture, School of Engineering of Nazarbayev University, Apr. 2, 2019, Astana, Kazakhstan.
- Sugita, M.: Visiting Professor, Kyoto University, Apr.1, 2018-Mar. 31, 2020.

### [e] Atmospheric Science

#### *Research projects*

- Tanaka, H. L. (2007- ): Joint study of NICAM (AORI, the University of Tokyo).
- \_\_\_\_\_ (2009- ): Normal mode of the atmosphere (University of Humburg).
- \_\_\_\_\_ (2013- ): Volcanic ash prediction by PUFF model (DPRI, Kyoto University).
- \_\_\_\_\_ (2018- ): Analysis of Atmospheric Blocking (University of Missouri-Columbia).
- Ueda, H. (2017- ): Joint study of MRI-CGCM (Japan Meteorological Agency).
- Ueno, K. (2017- ): Joint study of PMM 8thRA (JAXA).

#### *Research grants*

- Tanaka, H. L. (2017-2019): The theory of Rossby wave breaking and saturation for geostrophic turbulence. Grant-in-Aid for Scientific Research (C), JSPS, JPY 4,420,000.
- Ueda, H. (2017-2020): Grant-in-Aid for Scientific Research (C) of the Japan Society for the Promotion of Science.
- Ueno, K. (2019): Joint study of JAXA PMM 8thRA, (PI by K. Ueno) JPY 1,157,000.
- Matsueda, M. (2020-2021): Weather regimes in Europe and Asia: Subseasonal Predictability (WEASP), University of Tsukuba-DAAD Partnership Program, University of Tsukuba, JPY 2,206,000.
- \_\_\_\_\_ (2015-2020): Arctic Challenge for Sustainability (ArCS), MEXT, JPY 25,000,000.
- Harada, M. (2019): Contract research project in Astrobiology Center, NINS, JPY 1,400,000
- \_\_\_\_\_ (2019): Research grant Project for University-Industry Cooperation Strengthening in Tsukuba, University of Tsukuba, JPY 1,000,000

#### *Attendance at international meetings*

- Ueda, H. (2019, Jul.): The 27th IUGG General Assembly, 2019, Montreal, Canada.
- Ueno, K. (2019, Sep.): International Mountain Conference. Innsbruck, Austria.
- \_\_\_\_\_ (2020, Feb.): International Symposium on Mountain Sciences 2020. Tsukuba, Japan.

#### *Others*

- Kobayashi, Y. and Ueno, K. (2019, Dec.): An award of best poster for students in the fifth domestic workshop of mountain sciences, Tsukuba.

### [f] Geomorphology

#### *Research projects*

- Hattanji, T. (2009- ): Estimating long-term chemical weathering rate in granitic areas of Japan using cosmogenic radio nuclides and geochemical analysis, project with Matsushi, Y. (Kyoto Univ.)
- \_\_\_\_\_ (2016- ): Improving prediction models for shallow landslides based on channel-head mapping using LiDAR DEMs, project with Tanaka, Y. (Komazawa Univ.), Doshida, S. (National Research Institute of Fire and Disaster) and Furuichi, T. (Hokkaido Univ.)
- \_\_\_\_\_ (2017- ): Interaction of weathering, water erosion and landsliding in the Yahata Okuzure, Hokkaido, project with Parkner, T. (Univ. of Tsukuba)
- Ikeda, A. (2008- ): Permafrost monitoring on Mt. Fuji, project with Iwahana, G. (IARC-UAF), Imaizumi, F. (Shizuoka Univ.)
- \_\_\_\_\_ (2017- ): Geomorphological study on moor, grassland and shrub in a subalpine zone on heavily snow-covered mountains.
- Matsuoka, N. (2004- ): Arctic periglacial geomorphology, international project with Christiansen, H.H. (Univ. Centre in Svalbard, Norway) and Watanabe, T. (Kitami I.T.)
- \_\_\_\_\_ (2017- ): Multi-method approach to modeling erosion of high-relief mountains, international project with Stoffel, M., Ballesteros, J. (Univ. of Geneva), Imaizumi, F. (Shizuoka Univ.), Matsushi, Y. (Kyoto Univ.), Kariya, Y. (Senshu Univ.), Nishii, R. (Niigata Univ.) and Ikeda, A.
- Parkner, T. (2014- ): Gully erosion on unstable hillslopes in the East Coast Region, North Island, New Zealand.
- \_\_\_\_\_ (2017- ): Interaction of weathering, water erosion and landsliding in the Yahata Okuzure, Hokkaido, project with Hattanji, T. (Univ. of Tsukuba)
- Sekiguchi, T. (2007- ): Self-organization of 3D-patterned bedforms under complex oscillatory flow.
- \_\_\_\_\_ (2010- ): Study on ripple transition under unsteady oscillatory flows.
- \_\_\_\_\_ (2013- ): An experiment on sedimentary process of onshore tsunami deposit, project with Yamaguchi, N. (Ibaraki Univ.)

#### *Research grants*

- Hattanji, T. (2019): Development of spatio-temporal analysis of shallow landslides: Collaboration of process geomorphology with historical geomorphology and spatial information science. Grant-

in-Aid for Scientific Research (B), JSPS, JPY 4,400,000.

Matsuoka, N. and Ikeda, A. (2019): Multi-method approach to modelling erosion of high-relief mountains, JSPS, JPY 2,400,000.

Matsuoka, N. (2019): Developing evaluation methods of long-term debris flow risks, based on the prediction of source area, JSPS, JPY 300,000.

#### *Overseas fieldwork*

Matsuoka, N. and Ikeda, A. (2019, Jul.–Aug.): Periglacial observations in the Swiss Alps, toward systematic understanding of mountain landform dynamics (under JSPS grant).

Matsuoka, N. (2019, Aug.–Sep.): Landscape dynamics of polar and subpolar environments in Norway (under CryoJaNo project).

#### *Attendance at international meetings*

Matsuoka, N. (2019, Dec.): 1st Southern Hemisphere Conference on Permafrost, Queenstown, New Zealand.

Matsuoka, N. (2020, Mar.): Sixth International Symposium on Arctic Research, Tokyo, Japan (Online).

Parkner, T. (2019, Jul.): 8<sup>th</sup> International Symposium on Gully Erosion, Townsville, Australia

#### *Visited Researchers*

Prof. Markus Stoffel and Dr. Juan Ballesteros (Univ. of Geneva, Switzerland), 16th Oct.–22nd Oct. 2019.

IPY: International Polar Year

IGU: International Geographical Union

JAXA: Japan Aerospace Exploration Agency

JICA: Japan International Cooperation Agency

JSPS: Japan Society for the Promotion of Science

JST: Japan Science and Technology Agency

KAGIS: Korean Association of Geographic Information Studies

MAHASRI: Monsoon Asia Hydro-Atmosphere Scientific Research and Prediction Initiative

MAS: Mongolian Academy of Sciences

MEXT: The Ministry of Education, Culture, Sports, Science and Technology of Japan

MHLW: Ministry of Health, Labour and Welfare

MRI: Meteorological Research Institute (Japan)

NSF: National Science Foundation

RIHN: Research Institute for Humanity and Nature

TERC: Terrestrial Environment Research Center, University of Tsukuba

TRMM: Tropical Rainfall Measuring Mission

UAF: University of Alaska, Fairbanks

WERC: Water and Environmental Research Center

UNESCO: United Nations Educational, Scientific and Cultural Organization

UNESCO-IHP: International Hydrological Programme for UNESCO

#### **[Symbol]**

† Students, research assistants, researchers and fellows belonging to the research group

#### **[Acronyms]**

ACCU: Asia/Pacific Cultural Centre for UNESCO

AGU: American Geophysical Union

CAMP: CEOP Asia-Australia Monsoon Project

CAS: Chinese Academy of Sciences

CEOP: Coordinated Enhanced Observation Period

CliC: Climate and Cryosphere

CREST: Core Research for Evolutional Science and Technology

EGU: European Geosciences Union

GCCA: Global Change: Connection to the Arctic

GEWEX: Global Energy and Water Cycle Experiment

GEOSS: Global Earth Observation System of Systems

GI: Geophysical Institute

GISA: GIS Association in Japan

IARC: International Arctic Research Center

ICHARM: International Center for Water Hazard and Risk Management

IPCC: Intergovernmental Panel on Climate Change

**Activity Report for Academic Exchange and Cooperation between University of Tsukuba, Japan and University of Alaska Fairbanks, U.S.A.**

An agreement for Academic Exchange and Cooperation has been established on 11 January, 2000 between the Institute of Geoscience, the Doctoral Program in Geoscience of the University of Tsukuba, Japan and the International Arctic Research Center (IARC), the Geophysical Institute (GI) of the University of Alaska Fairbanks (UAF), U.S.A. (see the Annual Report, 2000). The agreement was successfully extended in 2005 for the five years (from 2005 to 2009), in 2009 for the next five years (from 2010 to 2014), in 2015 for the next five years (from 2015 to 2019) and in 2019 for the next five years under the new contract names of the Graduate School of Life and Environmental Sciences, the Center for Computational Sciences (CCS) of the University of Tsukuba, Japan. The agreement includes (1) exchange of professors and research scholars, (2) exchange of graduate students, (3) collaborative research and joint academic meetings, and (4) exchange of scientific documents, publications, and information. The agreement will be effective for a period of five years, and may be renewed for another period by mutual agreement.

Five students and staff were expected to visit IARC during 11-17 March, 2020 to hold a joint workshop on Arctic climate study organized with Syun-Ichi Akasofu and Hiroshi Tanaka. However, the workshop was cancelled by the breakout of COVID-19.

- (1) Exchange of Researchers: None.
- (2) Exchange of Graduate Students: None.
- (3) Collaborative Research: Research on Arctic Oscillation, PI: H.L. Tanaka (Univ. of Tsukuba).
- (4) Exchange of scientific documents:
  - Tsukuba Geo-Environmental Science, Vol.13, 2018, Univ. of Tsukuba.
  - Geophysical Institute Biennial Report, 2018, Univ. of Alaska.
  - Geophysical Institute Quarterly, 2018 Univ. of Alaska.